

# **AQUACULTURE AND HYDROPONICS: 1968-1978**

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**BIBLIOGRAPHIES AND  
LITERATURE OF AGRICULTURE,  
BLA-2, MAY 1979**

**UNITED STATES  
DEPARTMENT OF  
AGRICULTURE**

**SCIENCE AND  
EDUCATION  
ADMINISTRATION**

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Science and Education Administration, Bibliographies and Literature of  
Agriculture, No. 2, May 1979

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Aquaculture and Hydroponics: 1968-1978

Compiled by  
Charles N. Bebee  
Automated Retrieval Section  
National Agricultural Library

Bibliographies and Literature  
of Agriculture, BLA-2, May 1979

U.S. Department of Agriculture  
Science and Education Administration  
Technical Information Systems  
Beltsville, Maryland 20705

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## PREFACE

Citations for this bibliography were pulled from the AGRICOLA citation database online. They represent:

- Articles, monographs, and series, regardless of language, indexed at the National Agricultural Library since the publication of the January 1970 issues of the Bibliography of Agriculture and the National Agricultural Library Catalog.
- Literature received more than one year after publication is generally not indexed; exceptions are made for important scientific publications.

Some duplication of citations occurs because the system requires separate entries for each of the separate files which are incorporated into AGRICOLA. The compiler has attempted purging of known duplicate entries.

The bibliography is a broad subject arrangement by categories as used in The Bibliography of Agriculture; subarrangement is alphabetical by author. A personal author index is included.

User comments and suggestions are welcomed and should be forwarded to the compiler, Charles N. Bebee.

Citations listed on pages 58 - 65 are items from old category codes 1970-1971. These cannot be sorted online and are, therefore, arranged in single alphabetical order.

Richard A. Farley  
Deputy Director  
Technical Information Systems  
Science and Education Administration  
U.S. Department of Agriculture

SAMPLE CITATION

Lockheed Number				AGRICOLA Tape Number
NAL Call Number	1299904			Title
Personal Author	QC851.J6	Id No: 77-9092127		
Journal Title	The scales of hail .North American data.			
Abbreviation	Changnon, S A Jr			
	J Appl Meteorol	16 (6) : 626-648, Maps, Ref.	June 1977	
	QC851.J6			
NAL Call Number	Search: 19770600			Vol., issue no.,
Inverted Source Date	Source: OTHER US	Doc Type: ARTICLE, REVIEW, BIB		inclusive
Category Code	Cat Code: 0505			pagination,
	Descriptors: North America			date of publication
Descriptor term(s)		Type of Document		

## AVAILABILITY OF REFERENCES CITED

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NAL will loan monographs from its collection to any library in the United States. Individuals should request publications through their local public, school or special library. Excluded from loan are serials (except USDA serials), books in special collections such as Rare Books and Reference, and proceedings of meetings and conferences. Xerographic copy of microfilm will be supplied from non-circulating material at the expense of the borrowing library, when that library so indicates on the ALA Interlibrary Loan form (see RATES under PHOTODUPLICATION SERVICE below).

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2. Loan Period and Renewals: Material is loaned for 30 days from the date it is charged at NAL. Renewals should be requested by phone (301-344-3761).
3. Delivery and Returns: All loans will be sent first class and should be returned in the same manner. The borrowing library is responsible from the moment of dispatch for any loss or damage incurred.

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Xerographic Copy: \$2.00 for each 10 pages or fraction copied from a single article or book  
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## SEARCH STRATEGY

Set	Items	Description
1	90	AQUACULTURE?
2	139	WATER(F)CULTURE
3	53	WATER(F)CULTURES
4	263	HYDROPON?
5	542	1-4/+
6	256	5/MAJ
7	7	AQUICULTURE?
8	67	SOILLESS
9	324	6+7+8
10	279	9/MAJ
11	353	1+4
12	95	10-11
13	44	WATER(W)CULTURE
14	9	WATER(W)CULTURES
15	8	HYDROCULTUR?
16	467	1+4+7+8+13+14+15
17	233	16/MAJ
18	234	16/MIN
19	2	SOIL(W) LESS
20	468	16+19
21	22496	CC-55?
22	16276	CC=6020
23	20144	CC=6505
24	3443	OC=85
25	5497	OC=30
26	67250	21-25/+
27	50	20+26
28	418	20-27
29	197	28/MAJ
30	0	BEBEE/MORAN

Print 20/2/1-468

Search Time: 0.389 Prints: 468 Descs.: 20

## AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY

1315940

77.910971 Id No: 77-9910971

Aquaculture economics research needs; report from a workshop to identify aquaculture economics research needs. Atlanta. Georgia -- April 23. 1976

Smith, F J; Roberts, K J  
Charleston, SC. S. C. Marine Res Ctr S. C. Sea Grant Pgm. Tech Rep 5, 43 p Aug 1976  
77.910971

Search: 19760800

Source: OTHER US Doc Type: MONOGRAPH Location: AGE

Cat Code: 1005

Descriptors: Research Needs; Aquaculture

## GENERAL AGRICULTURE

1358666

SH1.F54 Id No: 78-9007852

The integration of aquaculture with agriculture

Buck, D H

Fisneries 2 (5): 11-12, 14-16. Nov/Dec 1977

SH1.F54

Search: 19771200

Source: OTHER US Doc Type: ARTICLE

Cat Code: 0505

591847

80 R3212 Id No: 73-9149678

L'aquaculture, technique d'avenir; Hydroponics, crop culture of the future

Cesar, G

Rev Hort Suisse 45 (5): 41-42. Feb 1973

80 R3212

Language: FRE

Search: 19730200

Doc Type: ARTICLE

Cat Code: 0505

1051876

HD1945.A115 Id No: 75-9121107

L'u'time r  serve de l'humanite? Les fermes marines; Maritime farms, the ultimate reserve of humanity? .Aquaculture.

Habenkonn, J P

Inf Agric (Paris) 461: 34-36. Sept 1975

HD1945.A115

Language: FRE

Search: 19750900

Doc Type: ARTICLE

Cat Code: 0505

780136

389.9 S01B Id No: 73-9227559

L'aquaculture: Source nouvelle de proteines alimentaires; Aquaculture: A new source of food proteins

Rouzaud, P

Bull Soc Sci Hyg Aliment 61 (1): 18-31. 1973

389.9 S01B

Language: FRE

Search: 19730000

Doc Type: ARTICLE

1257025

281.8 EK72 Id No: 77-9053494

Tehnicka i ekonomska procena razlicitih nacina uzgoja riba u ribnjacima. 2: Technical and economic estimate of different types of aquaculture in fish ponds .Farm management.

Apostolski, K M; Arsovski, B S

Ekon Poljopr 23 (5): 37-50. Eng. sum. May 1976

281.8 EK72

Language: SCR

Search: 19760500

Doc Type: ARTICLE

Cat Code: 1010

Descriptors: Yugoslavia

1330057

72.8 K522 Id No: 77-9117359

Cost accounting in exploitative aquicultural economies .Irrigation economics.

pinkhasov, M; Polinov, S

Khlopkovodstvo 8: 38-40. Aug 1976

72.8 K522

Language: RUS

Search: 19760800

Doc Type: ARTICLE

Cat Code: 1010; 6020

1267631 Id No: 77-9910337  
 100 AL1H Economic comparisons of singled cropped and multiple cropped catfish production systems  
 Crawford, K W  
 Alabama, Agricultural Experiment Station  
 Highlights Agric Res 23(3): 6 - Fall 1976  
 100 AL1H  
 Search: 19760000 Doc Type: ARTICLE Location: AGE  
 Source: EXP STN  
 Cat Code: 1015  
 Descriptors: Cost And Returns; Aquaculture; Alabama

1315913 Id No: 77-9910800  
 281.8 C16 An economic evaluation of aquaculture in Ontario  
 Lerner, A  
 Can J Agric Econ 25(1): 74-79 Feb 1977  
 281.8 C16  
 Search: 19770200  
 Doc Type: ARTICLE Location: AGE  
 Cat Code: 1015  
 Descriptors: Fisheries; Hatchery; Equipment; Labor  
 Requirements; Feeding; Costs; Marketing; Consumption

1235744 Id No: 77-9035319  
 80 W41 Costs and losses of soil and soilless media  
 Poole, H A  
 Florists Rev 159 (4132): 62, 87-91. Feb 10, 1977  
 80 W41  
 Search: 19770210  
 Source: OTHER US Doc Type: ARTICLE  
 Cat Code: 1015; 6005

1329359 Id No: 77-9910879  
 SH222.A107 Analyzing a new marine business  
 Smith, F J  
 Oregon State University, Extension Service  
 Sea Grant S G Oreg State Univ Mar Adv Program 34, 8 p  
 Nov 1976

SH222.A107  
 Search: 19761100  
 Source: EXT Doc Type: ARTICLE Location: AGE  
 Cat Code: 1015  
 Descriptors: Marine Industry; Business Management; Costs And Returns; Accounting; Resource Allocation

1222949 Id No: 77-9023843  
 SF95.A1P7 Can we afford aquaculture? .Industries.  
 Conklin, D E  
 Prof Nutr 8 (3): 3-7. Summer 1976  
 SF95.A1P7  
 Search: 19760000 Doc Type: ARTICLE  
 Source: OTHER US  
 Cat Code: 1030  
 Descriptors: United States

648578 Id No: 72-9122453  
 41.8 AM3 Aquaculture and mariculture: protein potentials  
 Poppensiek, G C  
 Amer Vet Med Assoc J 161 (11): 1467-1475. Ref. Dec 1, 1972  
 41.8 AM3  
 Search: 19721201  
 Doc Type: ARTICLE  
 Cat Code: 1030

885909 Id No: 74-9081588  
 TD172.E57 Critical variables in food-item population dynamics in a wastewater aquaculture system. .Fishery products.  
 Powers, J E  
 Environ Prot Technol Ser EPA U S Environ Prot Agency 660/2-74-041: 497-503. June 1974  
 TD172.E57  
 Search: 19740600  
 Doc Type: ARTICLE  
 Cat Code: 1030

848697 Id No: 74-9049127  
 SH1.A6 Comparison of the economic potential of aquaculture, land animal husbandry and ocean fisheries: the case of Taiwan. .Pig farming.  
 Shang, Y C  
 Aquaculture 2 (2): 187-195. Ref. Jun 1973  
 SH1.A6  
 Search: 19730600  
 Doc Type: ARTICLE  
 Cat Code: 1030  
 Descriptors: Taiwan

1287737  
S19.A32 Id No: 77-9081696  
Role of fresh-water aquaculture in integrated rural development in India  
Tripathi, S D  
Agric Agroind J 9 (12): 31-32. Dec 1976  
S19.A32  
Search: 19761200  
Doc Type: ARTICLE  
Cat Code: 1030  
Descriptors: India

871440  
12 AG8 Id No: 74-9069210  
Fish farming or aquaculture can meet future demand for protein-rich food  
Agric Newsl Neth 6: 1-4. 1974  
12 AG8  
Search: 19740000  
Doc Type: ARTICLE  
Cat Code: 1030

1181840  
SH21.15 Id No: 76-9111663  
The International Center for Aquaculture: annual report for fiscal year 1975 .Fisheries for growing protein, developing countries, programs.  
Alabama, Agricultural Experiment Station, International Center for Aquaculture  
Auburn 63 p. Ref. Dec 23, 1975  
SH21.15  
Search: 19751223  
Source: EXP STN Doc Type: MONOGRAPH, BIB  
Cat Code: 1030; 2505  
Descriptors: Alabama

1318284  
381 J8223 Id No: 77-9107328  
Hydroponic growth of crops -green beans, cantaloupes, cotton. in solutions saturated with .14C.benzo.a.pyrene -Carbon isotopes.  
Blum, S C; Swarbrick, R E  
J Agric Food Chem 25 (5): 1093-1096. Sept/Oct 1977  
381 J8223  
Search: 19771000  
Source: OTHER US Doc Type: ARTICLE  
Cat Code: 1505

648579  
41.8 AM3 Id No: 72-9122454  
Aquaculture and associated diseases of fish of public health importance  
Ghittino, P  
Amer Vet Med Assoc J 161 (11): 1476-1485. Ref. Dec 1, 1972  
41.8 AM3  
Search: 19721201  
Doc Type: ARTICLE  
Cat Code: 1505

795188  
22 IN283 Id No: 74-9004014  
Protein crisis and aquaculture  
Prasad, R R  
Indian Farming 23 (6): 5, 38. Sept 1973  
22 IN283  
Search: 19730900  
Doc Type: ARTICLE  
Cat Code: 1510  
Descriptors: India

#### AGRICULTURAL PRODUCTS

1051793  
501 L84B Id No: 75-9121024  
The aquacultural revolution .Cultivation of marine fish andshellfish for food.  
Anderson, J I W  
Proc R Soc Lond, B Biol Sci 191 (1102): 169-184. Ref. Nov 18, 1975  
501 L84B  
Search: 19751118  
Doc Type: ARTICLE  
Cat Code: 2005

1360151  
286.81 F322 Id No: 78-9009342  
Soft shell crawfish as an aquaculture food product  
Huner, J V  
Feedstuffs 49 (50): 28-29. Dec 5, 1977  
286.81 F322  
Search: 19771205  
Source: OTHER US Doc Type: ARTICLE, REVIEW  
Cat Code: 2005

- 1292275 Id No: 77-9084432  
QH705.F64 The food production efficiency of undomesticated species of animals from fish, aquaculture.  
Large, R V  
In Food Production and Consumption. A N. Duckham, J. G. W. Jones & E. H. Roberts, eds. p. 199-214. Ref. 1976  
QH705.F64  
Search: 19760000  
Doc Type: ARTICLE  
Cat Code: 2005
- 1255158  
157.8 R29 No.260562 Id No: 77-9682951 Book Cat: 770072 3  
Proceedings of the first International Conference on Aquaculture Nutrition, Oct. 14-15, 1975, Lewes/Rehoboth, Del.  
... /; Edited by Kent S. Price, Jr., William N. Shaw, Karin S. Danberg. --  
Price, Kent S  
International Conference on Aquaculture Nutrition, 1st, Lew, Es/Rehoboth, Del., 1975.  
Newark, Del. : College of Marine Studies, University of Delaware, viii, 323 p. : ill. ; 23 cm. -- 1976.  
157.8 R29 No.260562  
77007213  
Note: Sponsored by the Sea Grant College Program. University of Delaware in cooperation with the U.S./Japan Aquaculture Panel. Includes bibliographies and indexes.  
Search: 19760000  
Source: OTHER US Doc Type: MONOGRAPH  
Cat Code: 2005  
Descriptors: Aquaculture; Congresses.; Fishes; Feeding And Feeds; Congresses.
- 1192637  
S295.M3 Id No: 76-9121050  
Experimental aquaculture of the mussel, (*Mytilus viridis* L.) as a protein source  
Sivalingam, P M; Rajagopalan, K  
Malays Agric Res 4 (2): 137-139. Ref. Aug 1975  
S295.M3  
Search: 19750800  
Doc Type: ARTICLE  
Cat Code: 2005  
Descriptors: Malaysia
- 1224165  
SH21.15 Id No: 77-9025072  
The International Center for Aquaculture. Annual report for fiscal year 1974
- Alabama, Agricultural Experiment Station  
Augurn 11 p. 1974 (pub. May 1976)  
SH21.15  
Search: 19760500 Doc Type: MONOGRAPH  
Source: EXP STN  
Cat Code: 2005  
Descriptors: Alabama
- 564904  
389.8 V89 Id No: 72-9038192  
Iodine content in vegetables grown in soil and by hydroponics  
Fomichenko, E I  
Vop Pitan 30 (5): 66-68. Ref. Eng. sum. Sept/Oct 1971  
389.8 V89  
Language: RUS  
Search: 19711000  
Doc Type: ARTICLE  
Cat Code: 2030
- 628959  
S544.3.H3H3 Id No: 72-9102690  
Feasibility studies in aquaculture  
Ball, J L  
Hawaii Univ Ext Misc Publ 93: 71-73. July 1972  
S544.3.H3H3  
Search: 19720700  
Source: EXT Doc Type: ARTICLE  
Cat Code: 2035
- 628960  
S544.3.H3H3 Id No: 72-9102691  
Nutrition problems in aquaculture. Aquatic animals.  
Bardach, J E  
Hawaii Univ Ext Misc Publ 93: 74-78. July 1972  
S544.3.H3H3  
Search: 19720700  
Source: EXT Doc Type: ARTICLE  
Cat Code: 2035



## PLANT SCIENCE

- 753027  
SH21.15 Id No: 73-9392985 Book Cat: 73012365  
Annual report  
1st - 1970/71 -  
International Center for Aquaculture; Alabama. Agricultural  
Experiment Station  
Auburn, Ala.. Auburn University 1971-  
SH21.15  
73012365  
Note: Project AID/csd 2780  
Search: 19710000  
Source: EXP STN Doc Type: SERIES  
Cat Code: 2505  
Descriptors: Fish-culture
- 590878  
5590.85 Id No: 72-9064271  
Dispositif stérile pour cultures hydroponiques: Stérile  
apparat for hydroponic cultures. -Roots.  
Garcia, J L; Raimbault, M; Mouraret, M  
Soil Biol Int News Bull 14: 34-37. Ref. 1971  
5590.85  
Language: FRE  
Search: 19710000  
Doc Type: ARTICLE  
Cat Code: 4005
- 1276199  
SB320.A4 Id No: 77-9071490  
Utility of hydroponic cutting technique for chromosome  
number and morphology studies in Arachis .Peanuts.  
Simpson, C E; Davis, K S  
J APREA (Am Peanut Res Educ Assoc Inc) 7 (1): 1-3. Sept  
1975  
SB320.A4  
Search: 19750900 Doc Type: ARTICLE  
Source: OTHER US  
Cat Code: 4020

## VETERINARY MEDICINE

- 958405  
41.8 AM3 Id No: 75-9039506  
The Challenge of aquaculture for veterinarians  
Miller, W R  
J Am Vet Med Assoc 166 (8): 790-791. Apr 15, 1975  
41.8 AM3  
Search: 19750415  
Doc Type: ARTICLE  
Cat Code: 3005

## FORESTRY

- 931786  
99.9 C324 Id No: 75-9014719  
Zkusenosti s hydroponickym pestovaním semenacku lesnich  
drevin; Experience with hydroponic growing of forest tree  
seedlings  
Pospisil, J; Koutnik, V  
Lesnictvi 20 (7): 665-686. Ref. Eng. sum. July 1974  
99.9 C334  
Language: CZE  
Search: 19740700  
Doc Type: ARTICLE  
Cat Code: 3515
- 569047  
1.962 C5171 Id No: 72-9042338  
Soilless container system developed for growing conifer  
seedlings  
White, D P; Schneider, G  
Tree Planters' Notes 23 (1): 1-4. Feb 1972  
1.962 C5171  
Search: 19720200  
Source: USDA Doc Type: ARTICLE  
Cat Code: 3515

- 778283  
442.8 N22 Id No: 73-9225444  
Anatomomorphological features of the roots of cucumbers and  
tomatoes under conditions of hydroponics  
Zelenina, M V  
Nauch Dokl Vyssh Shk, Biol Nauk 7: 73-77. Ref. 1973  
442.8 N22  
Language: RUS  
Search: 19730000  
Doc Type: ARTICLE  
Cat Code: 4020

1180423

20.5 P872 Id No: 76-9110242

Dziedziczenie systemow korzeniowych jeczmenia. II. Wskazniki rozmiarow systemu korzeniowego odmian Gryf, Lubuski i Skrzyszowski, rosnacych w kulturach wodnych; Inheritance of barley root systems. II. Indices of roots dimension of cultivars Gryf. Lubuski and Skrzyszowski grown in water culture

Krzywanski, Z; Wojcik-Wojtkowiak, D; Borys, M W; Stroinski, A ; Wojciechowski, J

Pr Poznan Tow Przyj Nauk Wydz Nauk Roln Lesn 41: 231-238. Eng. sum. 1976

20.5 P872

Language: POL

Search: 19760000

Doc Type: ARTICLE

Cat Code: 4025; 4035

795389

SB126.5.15 1973 Id No: 74-9004223

Risultati di un quadriennio di sperimentazione sul miglioramento genetico delle piante per la coltura idroponica e prospettive future; Results of a four years experimentation on the genetic improvement of plants for hydroponic culture and outlook for the future

Panella, A

In International Congress on Soilless Culture, 3d,

Sassari, 1973. Proceedings 3d: 175-185. Eng. sum. 1973

SB126.5.15 1973

Language: IIA

Search: 19730000

Doc Type: ARTICLE

Cat Code: 4025

1213854

QH431.A1S25 Id No: 77-9016256

Využití hydroponie ve slechtění jarního ječmene: The use of hydroponics in spring barley breeding

Ruzicka, F

Genet Slechteni 11 (3): 255-261. Eng. sum. June 1975

QH431.A1S25

Language: CZE

Search: 19750600

Doc Type: ARTICLE

Cat Code: 4025

1180422

20.5 P872 Id No: 76-9110241

Dziedziczenie systemow korzeniowych jeczmenia. I. Wplyw poziomu potasu i fosforu na wzrost jeczmenia cv.

Skrzeszowski w kulturach wodnych; Inheritance of barley root systems. I. Effect of potassium and phosphorus level on growth of barley cultivar Skrzyszowski in water culture  
Wojciechowski, J; Borys, M W; Krzywanski, Z; Stroinski, A; Wojcik-Wojtkowiak, D  
Pr Poznan Tow Przyj Nauk Wydz Nauk Roln Lesn 41: 225-230. Eng. sum. 1976

Language: POL

Search: 19760000

Doc Type: ARTICLE

Cat Code: 4025; 4035

# PLANT PHYSIOLOGY AND BIOCHEMISTRY - GENERAL

693540

24 EA74 Id No: 73-9151458

Observations on the water culture technique for studying the effects of copper concentrations on Arabica coffee seedlings  
Aduayi, E A

East Afr Agr Forest J 38 (1): 62-69. Ref. July 1972  
24 EA74

Search: 19720700

Doc Type: ARTICLE

Cat Code: 4030

597456

20 ER4 Id No: 72-9070894

Dynamics of the contents of plastid pigments in several plants grown hydroponically and in soil  
Bazhanova, N V; Gevorkian, A G

Akad Nauk Arm Ssr Izv Biol Nauk 24 (2): 112-113. Feb 1971  
20 ER4

Language: RUS

Search: 19710200

Doc Type: ARTICLE

Cat Code: 4030

993414

275.29 Id13Idc NO.259 Id No: 75-9657439 Book Cat: 75008117

Hydroponic culture of plants

Boe, A A

Moscow 2 p. illus. 1974

275.29 Id13Idc NO.259

75008117

Series: Idaho. University. Cooperative Extension Service.  
Idaho current information series, no. 259 Search: 19740000

Source: EXT Doc Type: MONOGRAPH

Cat Code: 4030

Note: Title page in Armenian; and table of contents also in Armenian and English. Includes bibliographies.  
 Series: Akademiya nauk Armianskoi SSR. Institut agrokhimicheskikh problem i gidroponiki. Soobshcheniya; no. 7  
 Search: 19670000  
 Doc Type: MONOGRAPH  
 Cat Code: 4030

618603

QK882.155 1969 Id No: 72-9092217  
 Multiple increase in the crop-producing ability of plants grown in hydroponic conditions  
 Davtyan, G S  
 in Teoreticheskie Osnovy Fotosinteticheskoi Produktivnosti (doklady) p. 494-499. 1972  
 QK882.155 1969  
 Language: RU  
 Search: 19720000  
 Doc Type: ARTICLE  
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